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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No : 10/617,376
 Applicant : Flowers et al.
 Filed : July 11, 2003
 Title : Fluorine Gas Treatment of Washing Machine Parts

TC/A.U. : 1732
 Examiner : L. Lambelet

Docket No. : FLO002-091
 Customer No.: 27238

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Respectfully submitted,

Everett G. Diederiks, Jr.
 Attorney for Applicant
 Registration Number: 33,323

Date August 10, 2007

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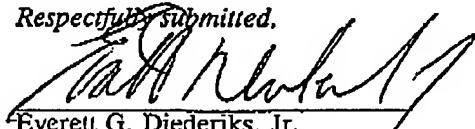
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Attorney for Applicant
Registration Number: 33,323

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Flowers et al.)
Serial Number 10/617,376) Group Art Unit: 1732
Filed July 11, 2003) Examiner: L. Lambrecht
) Docket No.: FLO002-091

For: Fluorine Gas Treatment of Washing Machine Parts

APPLICANT'S APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The Applicants of the above-identified U.S. patent application submit this Appeal Brief in support of an appeal from the final rejection of claims 1-13 in this application. The fee required under 37 C.F.R. § 1.117(f) accompanies this brief.

REAL PARTY IN INTEREST

The above-identified patent application has been assigned to the Maytag Corporation as set forth in an assignment document submitted to the United States Patent and Trademark Office and recorded on Reel 014283, Frame 0127.

RELATED APPEALS AND INTERFERENCES

There does not exist any known related appeals or interferences that would directly affect or be directly affected by or have a bearing on the decision in this case.

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STATUS OF CLAIMS

Claims 1-20 originally filed in this application were subject to a restriction requirement set forth in an Office Action dated June 1, 2006 between claims 1-13 directed to a method of treating a washing chamber and claims 14-20 directed to a dishwasher. After an election made in a response filed June 14, 2006, claims 14-20 stand withdrawn, while method claims 1-13 remain pending and rejected. More specifically, claims 1-6, 8-11 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over McGinniss et al. (U.S. Patent No. 4,491,653) in view of Seip et al. (U.S. Patent Application Publication No. 2004/0171724). Claims 7 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over McGinniss et al. in view of Seip et al. as applied to claims 1-6, 8-11 and 13 above, and further in view of Buschges et al. (U.S. Patent No. 5,882,728). None of the pending claims have been amended during prosecution and stand as originally filed. This appeal is taken of all the rejected claims, i.e., claims 1-13.

STATUS OF AMENDMENTS

The application has not been amended.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is directed to a fluorine gas treatment for washing machine parts, particularly dishwasher tubs, door liners, spray arm parts, as well as plastic clothes washing machine baskets. As noted in the subject application, plastic internal parts for washing machines are becoming increasingly popular due to the relatively low cost, lightweight and flexibility of design offered by plastic. However, one drawback that exists with plastic parts is the propensity to stain. Stained parts detract from the overall appearance of the appliance. This staining can be particularly problematic in the internal tub zone of a washing machine. The present application address this problem and sets

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forth a specific method whereby plastic washing machine parts are treated with a mixture of fluorine and oxygen gas in order to modify a surface layer of the plastic washing machine parts to establish a more stain resistant component.

For the above reasons, claim 1 describes a method for improving stain resistance of a plastic washing machine component. At first, a plastic washing machine component 150 is placed in a reaction chamber 160. (See page 7, lines 1-4 and Figure 3.) A gas mixture containing both fluorine gas and oxygen gas is introduced into the reaction chamber 160. (See page 7, lines 8-16.) The gas mixture reacts with plastic washing machine component 150 within reaction chamber 160 until the gas mixture modifies at least a surface layer 158 of plastic washing machine component 150 to make plastic washing machine component 150 more resistant to staining. (See, for example, page 7, line 17 through page 8, line 14.)

Claim 2 describes plastic washing machine component 150 as being formed from polypropylene. (See, for example, page 7, line 22.) Claim 3 introduces the step of retaining plastic washing machine component 150 in reaction chamber 160 with the gas mixture for about 0.5-60 minutes. (See, for example, page 7, line 26.) Claim 4 introduces the limitation of establishing a fluorine content at less than 10% of the gas mixture, by volume. (See, for example, page 10, line 11.) Claim 5 introduces the limitation of establishing a fluorine content of less than or equal to 5% of the gas mixture, by volume. (See, for example, page 10, lines 9-12.) Claim 6 adds the limitation of providing nitrogen in the gas mixture. (See page 10, lines 9-12.) Claim 7 sets forth the requirement that the gas mixture penetrate plastic washing machine component 150 to a depth of about 1000 angstroms. (See, for example, page 8, line 2.) Claims 8-11 specifically identify the washing machine component being treated. More specifically, claim 8 requires that plastic washing machine component 150 be a part of a dishwasher; claim 9 requires that plastic component part 150 be a dishwasher tub; claim 10 sets forth plastic washing machine component 150 as a dishwasher door liner; and claim 11 requires plastic washing machine component 150 to be a spray arm. (See, for example,

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the discussion on page 6, lines 12-17.) Claim 12 sets forth the limitation that the reaction chamber be maintained at a temperature of approximately 30-70° C. (See, for example, page 7, lines 13-15.) Finally, claim 13 adds the limitation of establishing a pressure of approximately 0.1-0.9 atmospheres in the reaction chamber. (See, for example, page 7, lines 13-15.)

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-6, 8-11 and 13 are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over McGinniss et al. (U. S. Patent No. 4,491,653) in view of Seip et al. (U.S. Patent Application Publication No. 2004/0171724).
2. Whether claims 7 and 12 are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over McGinniss et al. in view of Seip et al. as applied to claims 1-6, 8-11 and 13 above, and further in view of Büschges et al. (U.S. Patent No. 5,882,728).

ARGUMENTS

1. Claims 1-6, 8-11 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McGinniss et al. (U. S. Patent No. 4,491,653) in view of Seip et al. (U.S. Patent Application Publication No. 2004/0171724).

1(a). Claims 1-6 and 8

Claim 1 describes a method for improving stain resistance of a plastic washing machine component and requires that a plastic washing machine component be placed in a reaction chamber. A gas mixture containing both fluorine and oxygen is introduced into the reaction chamber such that the gas mixture reacts with the plastic washing

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machine component until the gas mixture modifies at least a surface layer of the plastic washing machine component to make plastic washing machine component more resistant to staining.

Claims Limited to Plastic Washing Machine Components

McGinniss et al., known to the Applicant and cited to the Examiner with the filing of the application, is concerned with treating fibers of clothing, plastic storage bags for blood and safety glasses by surface fluorination (see column 1, lines 25-29). In contrast, the present invention is limited to treating plastic washing machine components.

Recognizing that McGinniss et al. fails to teach treating a plastic washing machine component, the Examiner relies upon Seip et al. (U.S. Patent Application Publication No. 2004/0171724) which discloses a polyolefin composition exhibiting enhanced stain resistance. More specifically, Seip et al. teaches making a molded household article from a composition containing an additive package to enhance stain resistance. The additive package must have a phenolic antioxidant, a phosphate and an acid scavenger incorporated into a polyolefin. It is important to note that nowhere in Seip et al. is there any discussion or reference to providing any surface treatment for enhancing stain resistance, let alone any discussion or reference to fluorine. The test for patentability under 35 U.S.C. § 103 is basically whether the differences between the claimed subject matter, considered as a whole, and the prior art would have been obvious at the time the invention was made. Reaching this determination, the skill and content of the prior art, the differences between the prior art and the claimed subject matter and the level of ordinary skill in the art must be considered, along with the relevant secondary issues.

Graham v. John Deere Co., 381 U.S. 1, 148 USPQ 459 (1966). As Seip et al. is concerned with providing a stain resistance additive package to a formulation used to make a molded product, such an arrangement is quite distinct from taking an already formed product and surface treating the same for stain resistance purposes. Therefore, the Examiner is attempting to modify prior art which teaches to fluorine treat a clothing

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fiber, plastic bag or safety glasses by prior art which teaches making a molded article from a polyolefin composition specifically having a phenolic antioxidant, a phosphate and an acid scavenger for stain resistance. However, in utilizing Seip et al., the Examiner appears to completely disregard the teachings concerning the mandated composition for stain resistance and just picks out the fact that the composition can be used in making components for household appliances. References must be evaluated by ascertaining the facts fairly disclosed therein as a whole. It is impermissible to first ascertain factually what [applicant] did and then view the prior art in such a manner as to select from the random facts of that art only those which may be modified and then utilized to reconstruct applicant's invention from such prior art. *In re Shuman and Meinhardt*, 150 USPQ 54 (CCPA 1966).

In making his rejection, the Examiner argues that the combination of McGinniss et al. and Seip et al. is proper because they are concerned with a similar field, namely stain-resistant polyolefin surfaces. While true that both references are concerned with stain resistant polyolefins, McGinniss et al. takes a preformed product and employs a surface treatment theron, while Seip et al. changes the overall composition used to make the component. Nowhere in the Seip et al. reference is there a teaching or suggestion to only do a surface treatment for stain resistance in household appliance components, nor does the Seip et al. reference refer to fluorination. If the Examiner is going to rely upon Seip et al. to teach to make components of household appliances stain resistant, then one would look to utilize the composition disclosed by Seip et al. to achieve that desire, particularly as McGinniss et al. has absolutely no teaching that fluorine treatment would even work on the type of stains encountered in connection with a household appliance component. If the modifications are suggested by the Examiner in order to achieve the claimed invention would destroy the fundamental characteristics of the base reference, the rejection is improper. *In re Rosin* 673 F.2d 388, 213 USPQ 247.

In the present instance, McGinniss et al. only teaches to employ fluorination with cloth fibers, storage bags and safety glasses, and Seip et al. specifically teaches to utilize

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an entirely different process if it is desired to mold household items like drinking glasses and appliance components which will be stain resistant. Any attempt to replace the phenolic antioxidant, phosphite and acid scavenger additive package of Seip et al. with the fluorination process of McGinniss et al. would completely destroy the teachings of Scip et al. and fail to account for what each reference teaches as a whole. In any event, the Examiner argues that the references are combinable because they are concerned with the same technical field, namely stain resistant polyolefin surfaces. The Examiner also argues that one of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of McGinniss et al. the composition, as taught by Seip et al., and would have been motivated to do so for the commercial benefit obtained. The Applicant submits that this is not a proper motivation argument and, in fact, is not drawn from either of the cited references. The courts have stated that rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. In particular, as set forth by the Supreme Court, there must be an apparent reason for one of ordinary skill in the art to combine known elements in the fashion claimed by the patent at issue. This analysis should be made explicit. *KSR International Co. v. Teleflex Inc. et al.*, 550 US ___ (2007) (citing *In re Kahn*, 441 F.3d 977 (Fed Cir 2006). Merely stating that the combination of McGinniss et al. and Seip et al. is obvious due to the commercial benefit obtained is a conclusory statement. The Examiner has provided no evidence or articulated reasoning to support this position, instead the Examiner has simply stated a conclusion.

Both Fluorine and Oxygen Present

In connection with the controlled surface-fluorination process of McGinniss et al., the described process is, as disclosed, employed to improve surface quality of polymeric solids formed from silicone resins, polyolefins, polyvinyls, polyesters, polyacrylates, polyethers, polyamides, polysulfones, cellulosic materials, polycarbonates, polyepoxides,

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polyacrylonitriles (PAN), and other polymeric solids. The process described in McGinniss et al., while using fluorine, expressly discusses disadvantages to the presence of oxygen. More specifically, McGinnis notes, in column 4, lines 21-25, the presence of an adequate proportion of oxygen to cause oxidation of the surface also substantially inhibits penetration of fluorine into the substrate for formation of fluorocarbon groups. Towards that end, McGinniss et al. establishes various criteria for the treatment process which includes evacuating oxygen from a treatment cell containing a sample to be treated. In all of the examples employing the process taught by McGinniss et al., oxygen is not a part of the gas mixture.

In his rejection, the Examiner appears to focus on Example 4, which refers to a process taught by Dixon et al. (U.S. Patent No. 4,020,223) disclosing fluorination of polyolefin polyacrylonitrile fibers. In a table presented in connection with Example 4, oxygen is not part of the gas mixture used by McGinniss et al. However, the table does indicate that oxygen is used in the process disclosed by Dixon et al. This comparison presented by the table is used by McGinniss et al. to illustrate the disadvantage of employing oxygen in the McGinniss et al arrangement, not to teach adding oxygen as held by the Examiner. Therefore, this disclosure clearly teaches away from the present invention. A factor relevant to motivation to combine or modify the prior art is when the prior art teaches away from the claimed invention. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be led in a direction divergent from the path that the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994). When the prior art teaches away from combining certain elements, discovery of a successful means of combining them is more likely to be nonobvious. See United States v. Adams, 383 U.S. 39 (1966). At best, McGinniss et al. recognizes Dixon et al., which is not part of the Examiner's rejection and only teaches using oxygen as part of a fluorination process to treat fibers. Regardless, McGinniss et al. is specifically outlining the downside of using oxygen to treat solid components. This distinction will also become more fully apparent below when discussing the rejection of claim 7.

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1(b). Claims 9-11

Claims 9-11 require the method of the invention to be performed on specific plastic washing machine components, namely a dishwasher tub, a dishwasher door liner and a dishwasher spray arm. Granted, Seip et al. states that the composition containing the phenolic antioxidant, phosphate and acid scavenger could be used to form components of household appliances. However, there is absolutely no teaching regarding the specific components recited in these claims. How do we even know from the references that either the fluorine treatment of McGinniss et al. or the composition of Seip et al. would be contemplated for or could even provide requisite stain resistance to these specific components? For all we know from the cited teachings, Seip et al. was only referring to plastic knobs or trim pieces of household appliances, not components which could have spaghetti sauce and other highly staining foods periodically placed thereon. The Examiner has not presented any comments or evidence of any reasonable likelihood of success at arriving at the present invention with the teachings in the combination. Three requirements must be met to show a prima facie case of obviousness under 35 U.S.C. §103: 1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the prior art reference must teach or suggest all of the claim limitations. See M.P.E.P. §2143 (*citing In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). In the present case, there is no teaching of treating the specifically claimed components, nor is there any suggestion of a reasonable expectation of success. The CAFC in *In re Gordon*, 221, USPQ 1125, 1127 (1984) stated:

The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. (Case citations.)

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1(c). Claim 13

Claim 13 requires a pressure of approximately 0.1 to 0.9 atmospheres to be established in the reaction chamber. Broadly, the claim could be characterized to require at least some below atmosphere or vacuum environment. The Examiner rejects the claim based on McGinniss et al. stating in column 2, lines 25-33 that the fluorine treatment is performed "at a pressure not substantially above about one atmosphere..." It is submitted that the clear meaning of this phrase is that the pressure in the reaction chamber is above one atmosphere, but just not substantially above about one atmosphere. As claim 13 requires a below atmospheric pressure, the limitations of this claim are not met.

2. Claims 7 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McGinniss et al. in view of Seip et al. as applied to claims 1-6, 8-11 and 13 above, and further in view of Büschges et al. (U.S. Patent No. 5,882,728).

2(a). Claim 7

Even though Dixon has not been made part of the rejection set forth by the Examiner, the teachings in Dixon et al. actually support the hypothesis made by McGinniss et al. regarding surface penetration of the fluorine when oxygen is present. More specifically, Dixon et al., in column 3, lines 9-64, explains that the presence of elemental oxygen in the reaction medium limits surface penetration of the fluorine to within 300 angstroms of the fiber surface. When discussing Dixon in connection with Example 4, McGinniss et al. actually only acknowledges surface penetrations of 20-30 angstroms. This level of penetration may be fine for the articles treated by the process described by McGinniss et al. and Dixon et al., but claim 7 specifically requires treatment to a depth of 1000 angstroms for the treated plastic washing machine component.

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Recognizing this shortcoming, the Examiner rejects claim 7 under 35 U.S.C. § 103(a) as being unpatentable over McGinniss et al. in view of Seip et al. and in further view of Büschges et al. (U.S. Patent No. 5,882,728). Büschges et al. is directed to a polymeric material consisting of at least one fluorine containing layer and one non-fluorine containing layer. Büschges et al. is particularly concerned with producing polymeric materials that act as a barrier for hydrocarbon-containing mixtures, such as fuel mixtures. More specifically, Büschges et al. sets forth a process in which a polymer is subjected to a four stage process whereby the polymer is exposed to different pressures, temperatures and fluorine concentrations for different time periods. The resulting polymer establishes only one layer of a multi-layer polymer article which is later formed. It is unclear how the Examiner proposes to modify McGinniss et al. with Büschges et al. or why one of ordinary skill in the art would look to use a fuel mixture barrier as set forth by Büschges et al. to combine with the McGinniss et al./ Seip et al. arrangement. Without any supporting evidence or articulated reasoning, the Examiner simply states that it would have been obvious to include, in the method of McGinniss et al. and Seip et al., the penetration depth as taught by Büschges et al.

A proper rejection under 35 U.S.C. § 103 cannot be based on hindsight knowledge of the invention under consideration for the sole basis of attempting to meet the recitations of the claims. *CAFC in Environmental Designs, Ltd. v. Union Oil Co. of Cal.* 218 USPQ 865, 870 (1983). Once again, the Applicant notes that rejections made on obviousness grounds cannot be sustained by mere conclusory statements. Instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. KSR, supra. What reason is there to combine the references in the manner suggested by the Examiner? Certainly, it is recognized that the processes are very different, directed at different base materials and employed to make entirely different articles. How could a person of ordinary skill in the art at the time of the present invention even remotely consider the combination of references as being obvious? What rational underpinning, articulated reasoning or facts has the Examiner presented to support such a conclusion? For example, from which stage of the Büschges

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et al. process does the Examiner propose to take the temperature range, fluorine concentration and exposure time to obtain the penetration depth of 1000 angstroms as required by claim 7? It is respectfully submitted that this picking and choosing of select operational or result parameters, particularly when taken from art not at all concerned with making a product analogous to the invention, is improper. A reference that performs a step of a claimed process for a different purpose and does not recognize the problem solved in the applicant's process does not render the process obvious. *Ex parte Wisdom et al.*, 184 USPQ 822 (POBA 1973).

2(b). Claim 12

For reasons corresponding to those argued above with respect to at least claim 7, it is submitted that the rejection of claim 12 is improper. Büschges et al. is particularly concerned with producing polymeric materials that act as a barrier for hydrocarbon-containing mixtures, such as fuel mixtures. One of ordinary skill in the art would not look to Büschges et al. and, more particularly, isolated parameters of the process of Büschges et al., to surface treat an entirely different product for an entirely different reason.

CONCLUSION

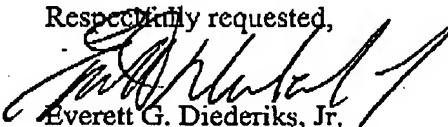
The Examiner must recognize that the Applicant has not attempted to claim the broad concept of fluorinating plastic components in general. Instead, a specific fluorination process is employed to address a specific problem associated with surface staining in the limited field of washing machine components. The method requires a treatment gas that contains an amount of oxygen. The main reference relied upon by the Examiner, McGinniss et al., specifically teaches away from utilizing oxygen in fluorine treating of solids. In addition, McGinniss et al. is actually concerned with making synthetic clothing fibers, plastic storage bags, safety glasses and the like, which are very

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different from plastic washing machine components. The Applicant of the present invention has not only found a way to effectively include oxygen in the gas mixture, but establishes a deep surface penetration of a plastic washing machine component which is exposed to high temperatures, detergents and foods containing various acids that, left in contact with untreated surfaces, leave unsightly stains. The prior art does not address this invention at all. At best, Seip et al. teaches a special composition for certain household appliance components. However, Seip et al. is seen to teach away from utilizing fluorination in connection with any household articles. Finally, Büschges et al. is concerned with preventing the penetration of storage containers, particularly fuel storage containers, and has nothing to do with stain resistance.

Based on the above, a favorable decision on this appeal is requested.

Respectfully requested,



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1. A method for improving stain resistance of a plastic washing machine component comprising:
 - placing the plastic washing machine component in a reaction chamber;
 - introducing a gas mixture containing fluorine and oxygen into the reaction chamber; and
 - reacting the gas mixture with the plastic washing machine component within the reaction chamber until the gas mixture modifies at least a surface layer of the plastic washing machine component to make the plastic washing machine component more resistant to staining.
2. The method according to claim 1, wherein the plastic washing machine component is molded of polypropylene.
3. The method according to claim 1, further comprising: retaining the plastic component in the reaction chamber with the gas mixture for about 0.5-60 minutes.
4. The method according to claim 1, further comprising: establishing a fluorine content at less than 10% of the gas mixture, by volume.
5. The method according to claim 4, further comprising: establishing a fluorine content less than or equal to 5% of the gas mixture, by volume.
6. The method according to claim 1, further comprising: providing nitrogen in the gas mixture.
7. The method according to claim 1, further comprising: penetrating the plastic component with the gas mixture to about 1000 angstroms.

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8. The method according to claim 1, further comprising: utilizing the plastic washing machine component to form a dishwasher.
9. The method according to claim 8, further comprising: employing a dishwasher tub as the plastic washing machine component.
10. The method according to claim 8, further comprising: employing a dishwasher door liner as the plastic washing machine component.
11. The method according to claim 8, further comprising: employing a dishwasher spray arm as the plastic washing machine component.
12. The method according to claim 1, further comprising: maintaining the reaction chamber at a temperature of approximately 30-70°C.
13. The method according to claim 1, further comprising: establishing a pressure of approximately 0.1-0.9 atmospheres in the reaction chamber.

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EVIDENCE APPENDIX

Not Applicable

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RELATED PROCEEDING APPENDIX

Not Applicable